

SOV/144-59-9-1/15

Electronic Analoguing of the Hysteresis Characteristics of Magnetic Materials

memory device and an integrating amplifier. The parameters of these circuits can be determined graphically by the method of successive approximations. The loops and partial-symmetrical and non-symmetrical cycles analogued by the circuit of Fig 9 are illustrated in Fig 10; the actual loops and partial cycles are shown in Fig 11.

There are 11 figures, 3 tables and 3 Soviet references, one of which is translated from English.

ASSOCIATION: Kafedra elektricheskikh apparatov, Khar'kovskiy politekhnicheskii institut (Chair of Electrical Apparatus, Khar'kov Polytechnical Institute) ✓

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SUBMITTED: May 15, 1959

VASIL'YEV, V.G., kand.tekhn.nauk, dots.; KONDRATENKO, A.I., inzh.;  
LOMAKIN, V.P., inzh.; TARASOVA, N.Ya., inzh.

Use of an electronic model in the study of the electric  
drive of the EVG-15 excavator. Elektrichestvo no.6:39-41  
Je '60. (MIRA 13:7)

1. Khar'kovskiy politekhnicheskii institut im.Lenina.  
(Electric driving)  
(Excavating machinery—Electric driving)

VASIL'YEV, Viktor Georgiyevich, dotsent, kand.tekhn.nauk; LOMAKIN,  
Viktor Pavlovich, aspirant

Electronic simulation of circuits containing multi-wound  
magnetic systems. Izv.vys.ucheb.zav.; elektro-mekh. 3  
no.1:8-15 '60. (MIRA '13:5)

1. Zaveduyushchiy kafedroy elektricheskikh apparatov Khar'-  
kovskogo politekhnicheskogo instituta (for Vasil'yev).
2. Kafedra elektricheskikh apparatov Khar'kovskogo politekhnicheskogo instituta.  
(Electromechanical analogies)  
(Electromagnets)

69406

S/144/60/000/04/001/017

E194/E455

16.9500  
AUTHORS: *Viktor Georgiyevich*  
*Vasil'yev, V.G.*, Candidate of Technical Sciences, Dotsent  
and *Lomakin, V.P.*, Aspirant

TITLE: Structural Diagrams and Electronic Analogues of Systems  
Containing Cross-Field Amplidynes,<sup>9</sup>

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Elektromekhanika,  
1960, <sup>3</sup>Nr 4, pp 3-10 (USSR)

ABSTRACT: The analogue representation of amplidynes usually  
consists of two series inertia links with no allowance  
for internal feed-back. This can lead to serious errors  
because internal feed-back may have a decisive influence  
on transient processes. An article by Ye.L.Ettinger and  
Yu.R.Reyngol'd (Ref 4) gave a very satisfactory  
structural diagram to serve as a basis for analogues of  
amplidynes with internal feed-back. In somewhat amended  
form, the transmission functions given in that article  
for resistively and inductively loaded amplidynes are  
of the forms of Eq (1) and (2) respectively. The form  
of Eq (3) applies to an amplidyne-generator system  
where the amplidyne is the generator exciter. The  
physical meaning of Eq (1) is discussed; the amplidyne

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is represented as two inertia links with appropriate feed-backs. The input magnitude of the first link is the voltage on the control winding together with an additional resistance; the output magnitude of the second link is the direct-axis emf. The representation of brush displacement, iron loss and other features is explained. The structural diagram of an amplidyne with resistive load constructed according to Eq (1) is shown in Fig 2; the corresponding diagram for an amplidyne-generator system corresponding to Eq (3) is shown in Fig 3. In both cases, the output magnitude is the direct-axis emf but in practical cases the total amplidyne armature emf is often of interest. It can be determined from Eq (5) which may be represented by a link with transmission function (6) connected as shown in the diagram of Fig 3. The final amended structural diagram of a non-linear amplidyne-generator system is shown in Fig 4. The structural diagram discussed above may be used to formulate analogues of amplidynes with

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resistive or inductive load and of an amplidyne-generator system. For example, Fig 5 shows the diagram of such an analogue. The accuracy of reproduction of transients on the model was verified by comparing oscillograms obtained on the actual amplidyne and on the analogues. To this end, oscillograms were made of the amplidyne transients for the no-load and resistive load conditions. One of the amplidyne windings provided feed-back according to the amplidyne voltage as shown in the diagram of Fig 6. The corresponding structural diagram is shown in Fig 7 which was used to construct the analogue circuit shown in Fig 8. The open position of the switch P1 in Fig 7 and 8 corresponds to the no-load condition of the amplidyne and the closed position of the switch to operation on load. As will be seen from the oscillograms given in Fig 9, there is very close agreement between the transients in the actual amplidyne and in the analogue. In some drives capacitance or inductance may be connected in series with

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the amplidyne control windings instead of resistance.  
In this case, the analogue should be based on the  
procedure described in a previous article by the same  
authors with appropriate modifications to the circuits  
given here. There are 9 figures and 7 Soviet references.

ASSOCIATION: Khar'kovskiy politekhnicheskii institut, *Chief of Electron Apparatus*  
(Khar'kov Polytechnical Institute)

SUBMITTED: November 27, 1959

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9.7280

9.2570

S/144/60/G00/007/003/007

E194/E455

AUTHORS:

*Viktor Georgiyevich*  
Vasil'yev, V.G., Candidate of Technical Sciences and  
Lomakin, V.P.

TITLE:

A Structural Diagram and Electronic Model of a Cross-  
Field Amplidyne Connected to a Branched Load

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy  
Elektromekhanika, 1960,<sup>3</sup>No.7, pp.42-46

TEXT: In order to investigate dynamic systems with analogue computers, it is necessary to draw up structural diagrams of individual links of the systems investigated: it is accordingly of interest to formulate the structural diagram of an amplidyne. This was done for the case of an amplidyne with a single resistive or inductive load in an article in Izvestiya vysshikh uchebnykh zavedeniy Elektromekhanika, 1960, No.4. In many cases, however, the amplidyne load circuit is branched and then the dynamic processes in the amplidyne are very different from those occurring in the case of a single load. A typical example of a branched load is that illustrated in Fig.1, in which an amplidyne is used to excite a generator field winding which is shunted by a resistance. Circuits of this kind are used in many cases

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A Structural Diagram and Electronic Model of a Cross-Field  
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drives, for example in excavators. The present article shows how to formulate a structural diagram of the amplidyne for this case, which is typical of amplidynes with branched loads. Fig.2 shows the structural diagram of an amplidyne supplying a generator field winding, already derived in the earlier article. All that is now required is to make the modifications necessary to allow for the shunt resistor. Eq.(1), (2) and (3) are then written down for the amplidyne load circuit and solutions are obtained in the form of the transmission functions (4) and (5). These may be used to modify the structural diagram of Fig.2, giving that of Fig.3 for the case of an amplidyne generator supplying a branched load. Usually the amplidyne armature resistance is much smaller than the generator field or shunt resistances that form the load. In such cases, Eq.(6) and (7) can be considerably simplified to the forms of Eq.(10) and (11) respectively, and further equations (12), (13) and (14) may be derived. The structural diagram of Fig.3 may then be simplified to that of Fig.4 which forms the basis of the electronic model,

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a diagram of which is shown in Fig.5. This model makes allowance for the nonlinearity of the no-load curve of the amplidyne and generator in the same way as was done in the earlier article. There are 5 figures and 3 Soviet references.

ASSOCIATIONS: Khar'kovskiy politekhnicheskiy institut, *Chr. Electric Apparatus*  
(Khar'kov Polytechnical Institute)

SUBMITTED: January 22, 1960

Card 3/3

VASIL'YEV, V.G., kand.tekhn.nauk; LOMAKIN, V.P., inzh.

Electron model of the electromechanical systems for digging mechanisms on powerful excavators. Izv. vys. ucheb. zav. gor. zhur. no.8:107-116 '60. (MIRA 13:9)

1. Khar'kovskiy politekhnicheskii institut im. V.I. Lenina. Rekomendovana kafedroy elektricheskikh apparatov.

(Excavating machinery--Electromechanical analogies)

(Electronic analog computers)

VASIL'YEV, V.G., kand.tekhn.nauk; IOMAKIN, V.P., inzh.; KALASHNIKOV,  
V.I., inzh.

Electron model of electromechanical lifting and thrust mechanisms  
on excavating machines with simultaneous operation on the  
part of these mechanisms. Izv. vys. ucheb. zav.; gor. zhur.  
no.9:109-116 '60. (MIRA 13:9)

1. Khar'kovskiy politekhnicheskii institut im. V.I. Lenina.  
(Excavating machinery—Electromechanical analogies)  
(Electronic analog computers)

S/194/61/000/007/008/079  
D201/D305

AUTHORS: Vasil'yev, V.G., Vlasov, F.M. and Mogilevskiy, G.V.

TITLE: The evaluation of the magnetic conductivity of the cylinder - rectangular parallelepiped system with the aid of an electrolytic bath

PERIODICAL: Referativnyy zhurnal. Avtomatika i radioelektronika, no. 7, 1961, 7, abstract 7 B38 (Tr. Khar'kovsk. politekh. in-ta, 1960, 30, no. 1, 41-48)

TEXT: Graphs are given for evaluating magnetic conductivity between a rectangular parallelepiped and a cylinder at given geometrical dimensions. The graphs were taken using an electrolytic tank with internal dimensions 45 x 80 cm. The magnetic conductivity was determined from the measurements of an electric conductivity parallelepiped between two electrodes, a cylinder and a rectangular parallelepiped with an a.c. potential being applied to the electrodes. The errors due to the field distortion in the tank of finite dimen-

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The evaluation of the magnetic...

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sions, were eliminated by taking the mean conductivity of two measurements with fully conducting and fully insulated walls of the electrolytic tank. 6 figures. 5 references. [Abstracter's note: Complete translation]

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VASIL'YEV, V.G.

Calculation of the design parameters of differentiating trans-  
formers. Trudy KhPI 30 no.1:49-56 '60. (MIRA 14:9)  
(Automatic control) (Electric transformers)

VASIL'YEV, V.G.; SHARLYA, I.

Dynamic characteristics of an isodromic IR-130 controller. Trudy  
KhPI 30 no.1:57-72 '60. (MIRA 14:9)  
(Temperature regulators) (Metallurgical plants--electric equipment)



VASIL'YEV, V.G.; ZVEREV, V.A.

Electric model of a rectifying bridge circuit. Izv. vys. uchob. zav.;  
elektromekh. 4 no. 1:75-82 '61. (MIRA 14:4)  
(Bridge circuits--Models)

VASIL'YEV, V.G.

Rounding the number of elements in stationary lead-acid storage  
batteries. Elek.sta. 31 no.2:91-92 F '60.  
(MIRA 13:5)

(Storage batteries)

7.3230

S/105/61/000/008/002/004  
E140/E163

AUTHORS: Vasil'yev, V.G., and Lomakin, V.P. (Khar'kov)  
TITLE: The design and calculation of electronic models of  
electrical networks

PERIODICAL: Elektrichestvo, 1961, No.8, pp. 41-45

TEXT: Generally in the modelling of electrical networks on  
analogue computers the point of departure is a system of  
differential equations describing the network. The number of  
operational amplifiers and integrators depends directly on the  
manner in which the equations have been set up, and therefore some  
discussion has been directed towards the most economical manner of  
doing this. The present note concerns a method for passing  
directly from the electrical network to the electronic analogue.  
Only networks with either single voltage or single current sources  
are handled by the method. The author first derives the equations  
indicating the validity of the method, gives certain rules for  
carrying it out, and states, without proof, that the method gives  
the smallest number of amplifiers and integrators for a given  
network. The method may be described as follows.  
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The design and calculation of .....

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1) The method of dual networks may be used to model planar electrical networks with lumped constants  $R$ ,  $L$ ,  $C$ , with a single source of voltage (current). 2) The circuit is modelled by inserting its dual in the feedback network of the operational amplifier. This circuit model will be termed the first dual transformation. The dual is constructed in the well-known manner. The voltage applied at the amplifier input is  $ku$ , where  $k$  is the scale factor in constructing the dual network. 3) Branches of the feedback network containing inductance are substituted by two series-connected amplifiers, one to invert the polarity and the second containing in its feedback network the dual of the substituted branch. The network model thus constructed is termed the second dual transformation. 4) The process of point 3 is carried out until no inductances remain in the circuit. 5) The values of the parameters in the model can be determined from Table 1. 6) The voltage across elements which have been transformed in the model in an odd number of steps will be modelled by currents flowing through the corresponding element, and vice versa. For those elements which have been transformed an even number of times, voltages will be modelled by voltages and currents by

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The design and calculation of .....

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currents. 7) For simplicity, networks driven by a single source of current are first transformed into voltage driven circuits, by introducing them without the dual transformation into the feedback network of the first stage of the modelling process.(Table 2). The successive steps for a typical network are shown in Fig.3. There are 4 figures, 2 tables and 2 references: 1 Soviet and the following English language reference:  
Ref.1: Joseph Otterman. "On the loop- and node-analysis approaches to the simulation of electrical networks." IRE Trans. Electronic Comput., 1958, V. Ec-7, No.3.

SUBMITTED: April 19, 1961

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KAMINSKAYA, D.A., inzh. (Khar'kov); VASIL'YEV, V.G., kand.tekhn.nauk  
(Khar'kov); LOMAKIN, V.P., inzh. (Khar'kov)

Study of capacitative stabilization in a motor-generator system  
with amplidyne control. Elektrichestvo no.9:78-82 S '61.  
(MIRA 14:9)  
(Electric current converters) (Rotating amplifiers)

VASIL'YEV, V.G.; TIMANOVSKAYA, L.Ye.

Electronic model of the electric drive of the TE-10 diesel locomotive. Izv. vys. ucheb. zav.; elektromekh. 4  
no.10:24-36 '61. (MIRA 14:11)

(Diesel locomotives)

(Electric railway motors—Models)

VASIL'YEV, V.G., kand.tekhn.nauk, dotsent; LOMAKIN, V.P., kand.tekhn.nauk;  
TIMANOVSKAYA, L.Ye., inzh.

Simulation of a magnetization curve using an electronic model.  
Elektrichestvo no.12:15-16 D '62. (MIRA 15:12)

1. Khar'kovskiy politekhnicheskii institut imeni Lenina.  
(Electric machinery—Electromechanical analogies)  
(Electric networks)



L 40798-66 EMT(m)/T/EMP(w)/EMP(t)/ETI - IJP(c) JD

ACC NR: AP6021000

SOURCE CODE: UR/0125/66/000/006/0010/0015 49

AUTHOR: Grabin, V. F.; Vasil'yev, V. G.; Kushnirenko, A.; Zamkov, V. N.; Gordonnaya, A. A. 48

ORG: Institute of Electric Welding im. Ye. O. Paton, AN UkrSSR (Institut elektrosvariki im. Ye. O. Patona AN UkrSSR)

TITLE: Kinetics of phase transformations in welded joints of VT15 titanium alloy 18 27

SOURCE: Avtomaticheskaya svarka, no. 6, 1966, 10-15

TOPIC TAGS: titanium alloy, phase composition, metal joining, weld evaluation / VT15 titanium alloy, EG-100A electron diffraction camera 10

ABSTRACT: The mechanical properties of the welded joints of this alloy are largely determined by the decomposition of  $\beta$ -phase and the properties of the products of its transformation. Hence, the determination of the temperature intervals of formation of these products and of their effect on weld properties is highly important, since it makes possible not only the assessment of the role played by intermediate phases in the embrittlement of weld metal but also the determination of the ways and means of perfecting the welding techniques so as to

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UDC: 621.791:620.181:669.295

L 10796-66

ACC NR: AP6021000

assure welds of improved quality. Accordingly, the authors investigated the kinetics of the  $\beta$ -phase in welded joints (obtained by submerged arc welding) of VT15 alloy under continuous heating. To this end the welded joints were subjected to dilatometric studies (with the aid of a vacuum differential dilatometer); the phase composition was investigated with the aid of an EG-100A electron diffraction camera; and the microstructure, with the aid of optical and electron microscopes. Findings: the presence of the martensite transformation  $\beta \rightarrow \omega$  at 450°C and the possibility of the formation of  $TiCr_2$  during continuous heating are established. It is further shown that the impact strength and plasticity of these welded joints may be optimized by quenching from 900°C since then the temperature interval of  $\beta \rightarrow \omega$  transformation is lower (~200-350°C) while the temperature interval of  $\alpha \rightarrow \beta$  transformation is higher (800-840°C). Orig. art. has: 7 figures, 1 table.

SUB CODE: 13,11,20/ SUBM DATE: 19Nov65/ ORIG REF: 007/ OTH REF: 003

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S/125/62/000/001/002/011  
D036/D113

AUTHORS: Malevskiy, Yu. B.; Vasil'yev, V. G.

TITLE: A method of plotting transformation diagrams in a thermal welding cycle

PERIODICAL: Avtomaticheskaya svarka, no. 1, 1962, 7-13

TEXT: A new heating method and a new design of metal specimen are suggested for plotting metal structure diagrams in a heat cycle corresponding to the cycles of different welding processes. The system automatically reproduces the welding heat cycle, suggested by Yu. D. Gupalo, includes a programmer consisting of two interblocked electric circuits the first of which heats the specimen quickly to the required temperature at a required rate, and the second switches on after the heating stops, and imitates the cooling cycle corresponding to the chosen welding process. The programmer imitates fairly accurately the heat cycle of arc and electro-slag welding. Transformation temperatures were fixed with a lever dilatometer of the Gridnev-Kocherzhinskiy system (Ref. 8: V. N. Gridnev, V. T. Cheropin, "Zavodskaya Laboratoriya", no. 3, 1957) produced at the Institut elektrosvarki im. Ye. O. Patona (Electric Welding Institute im. Ye. O. Paton) and used as an

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A method of plotting transformation ...

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attachment on a slightly modified 950-302 dilatometer. The thermic and the dilatometric curves are recorded on photographic paper. The specimen is heated by induction from a power generator (490 cps, 6 kw), and its temperature measured by two chromal-alumel thermocouples. The heating rate is set by a rheostat in the generator excitation circuit, and heating time by a thyatron time relay. A special device was built for hardening; specimens and preventing oxidation. The specimen consists of a 50 mm long middle portion, and two threaded 35 mm long arbors of austenitic 25-20 steel having a minimum heat conductivity and heat expansion. Even heat distribution was obtained in specimens of 3 mm in diameter and arbors with 4.5 mm outer diameter and 2.5 mm inner diameter. The temperature gradient along the specimen did not exceed 15-20°C, which is considered permissible for dilatometric measurements. The critical temperature points determined by the described method correlated fairly well with results obtained using a Chevenard dilatometer and standard specimens. The data show that the method can be used for determining the start and end points of transformation during continual cooling. Conclusions: (1) The proposed sample-arbor arrangement and induction heating method ensure even temperature

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A method of plotting transformation ...

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distribution throughout the length of the specimens and permit thermal regulation over a wide range of rates to be carried out; (2) a programming device was constructed and applied for automatically regulating the heating and cooling of specimens in dilatometric studies in accordance with the thermal cycle in any selected spot in welded joints; (3) the transformation diagram plotted at continuous cooling of 45 steel correlated well with previously constructed diagrams, thus showing that the described method can be used for studying the peculiarities of structural transformations in a welding heat cycle. The circuit diagram of the programming system is included. There are 5 figures, 1 table and 8 references: 7 Soviet and 1 non-Soviet-bloc. ✓

ASSOCIATION: Ordena Trudovogo Krasnogo Znameni Institut elektrosvariki im. Ye. O. Patona AN USSR (Electric Welding Institute "Order of the Red Banner of Labor" im. Ye. O. Paton, AS UkrSSR)

SUBMITTED: June 5, 1961

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S/125/61/000/011/003/012  
D040/D113

AUTHORS: Kakhovskiy, N.I., Ponizovtsev, A.M., Vasil'yev, V.G., and  
Lents, R.O.

TITLE: Welding of combination joints of 15Kh11MFB steel with 15Kh1M1F  
and 20 KhMF steels in CO<sub>2</sub>

PERIODICAL: Avtomaticheskaya svarka, no. 11, 1961, 20-26

TEXT: Results are given of experiments, conducted to work out recommendations  
for the welding in CO<sub>2</sub> of the new heat-resistant 15X11MФБ (15Kh11MFB)  
steel, proposed by the Leningradskiy metallicheskiy zavod (Leningrad Metal  
Plant). Data is given on the welding of combined joints of this steel with  
pearlitic steels used for steam turbines - 15X1M1Ф (15Kh1M1F) and 20XМФ  
(20KhMF). Their composition is as follows: ✓

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Welding of combination joints ...

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Table 1.

Chemical composition in %

	<u>C</u>	<u>Mn</u>	<u>Si</u>	<u>Cr</u>
15Kh11MFB	0.12-0.19	0.5-1.0	≤ 0.5	10-11.5
15Kh1M1F	0.14-0.20	0.4-0.7	0.17-0.37	1.2-1.7
20KhMF	0.18-0.25	0.4-0.7	0.15-0.37	0.9-1.2
	<u>Ni</u>	<u>Mo</u>	<u>V</u>	<u>Nb</u>
15Kh11MFB	0.6-1.0	0.6-0.8	0.20-0.35	0.10-0.25
15Kh1M1F	-	0.9-1.2	0.25-0.35	-
20KhMF	-	0.5-0.7	0.20-0.30	-

Satisfactory welds were obtained in butt joints with U-shaped edges in 60-70 mm thick steel plates using 320-350 amp, 28-30 v, 20 m/hr speed and 16-17 l/min CO<sub>2</sub>, preheating to 350°C and cooling in air after welding, fol-

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Welding of combination joints ...

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lowed by 10 hours tempering at 720°C with cooling in furnace to 200-250°C and finally in the open air. Somewhat higher hardness in the fusion zone compared to the weld and base metal was due to higher content of carbides, but the mechanical strength of the joints was satisfactory. Semiautomatic annular butt welding in pipes with 30-40 mm walls was carried out in the horizontal position with pipe edges shaped into an unsymmetric U; the weld root was welded with 1.0 mm wire, d.c. of 180-200 amp, 20-22 v, and the beads with 1.6 mm wire, 230-250 amp, 26-28 v. Two different semiautomatic welders were used for wire of different diameter and into the welding circuit was connected an PCT9-24 (RSTE-24) choke, which reduced spatter and stabilized the arc.  $\text{C}_8$ -08XГCМФ (Sv-08KhGSMF) and  $\text{C}_8$ -08X2ГCМФ (Sv-08Kh2GSMF) welding wires can be used for the pearlitic steel. Data on wires of this type is to be found in other Soviet publications (Ref. 1: B.S. Kasatkin, Yu.N. Vakhnin, "Avtomaticheskaya svarka", no. 3, 1958; Ref. 2: B.S. Kasatkin, Yu.N. Vakhnin, "Avtomaticheskaya svarka", no. 11, 1959). The following conclusions were drawn: (1) Sv-08KhGSMF and Sv-08Kh2GSMF wire may be employed; (2) Semiautomatic CO<sub>2</sub> welding of annular joints must be

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Welding of combination joints ...

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carried out in horizontal position. Thinner wire must be used for the root of the joint, and 1.6 mm wire may be used for the remaining layers of the weld to speed up the process. The use of inductive resistance in the welding circuit is advisable. There are 7 figures, 6 tables and 2 Soviet references. 

ASSOCIATION: Ordena Trudovogo Krasnogo Znameni Institut elektrosvarki im. Ye.O.Patona AN USSR (Electric Welding Institute "Order of the Red Banner of Labor" im. Ye.O.Paton of the AS UkrSSR)

SUBMITTED: May 9, 1961

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SOV/24-57-4-4741

Translation from: Referativnyy zhurnal. Mekhanika, 1957, Nr 4, p 124 (USSR);

AUTHOR: Vasil'yev, V. G.

TITLE: On Residual Deflections in Bar Systems Stressed Beyond Their Elastic Limit (Ob ostatochnykh progibakh i sterzhnevyykh sistemakh za predelami uprugosti)

PERIODICAL: Tr. Khar'kovsk. in-ta inzh. zh. d. transp., 1956, Nr 26, pp 213-234

ABSTRACT: The full and residual deflections of a single-span beam, a three-hinged arch, and a two-span continuous beam were computed by the Mohr method for particular cases of loading. The beams and the arch were rectangular in cross section. Tables of numerical values of the coefficients employed in the deflection formulas are given. In the case of arches, the effect of the normal forces on the magnitude of the residual deflections was investigated. The theoretical and the experimental values of deflections are compared. Contrary to the author's claims, the discrepancy between the theoretical and experimental values of deflections is quite significant in the case of pure flexure. A number of points in the article are obscure; in particular, it is not clear just how test-specimen beams 0.9-2.06 cm thick could be cut

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SOV124 57 4-4741

On Residual Deflections in Bar Systems Stressed Beyond Their Elastic Limit

from metal sheets 1.4-mm thick.

N. D. Zhud.n

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1401-124, 1-2.  
VIKOGRAOV, A.I. [Vynohradov, O.I.]; VASIL'YEV, V.G. [Vasyl'iev, V.H.]  
(Kharkiv)

Determining the displacements in bar systems of box-type and  
I-cross sections beyond the elastic limit. [in Ukrainian with  
summaries in Russian and English]. Prykl. mekh. 3 no.4:409-419  
'57. (MIRA 11:2)

1.Kharkivs'kiy institut inzheneriv zaliznichnogo transportu.  
(Girders)

VASIL'YEV, V.G.

The most efficient changes in cross sections of equally strong  
arches. Nauch.dokl.vys.shkoly; stroi. no.1:111-118 '59.

(MIRA 12:10)

1. Predstavlena kafedroy stroitel'noy mekhaniki Khar'kovskogo  
instituta inzhenerov shelesnodorozhnogo transporta.  
(Arches)

VASIL'YEV, V. G., Cand Tech Sci (diss) -- "Rational forms and the bearing strength of reinforced-concrete fixed arches under the influence of constant and temporary loads". Khar'kov, 1960. 26 pp (Min Transportation USSR, Khar'kov Inst of Railroad Transport Engineers im S. M. Kirov), 150 copies (KL, No 12, 1960, 127)

VASIL'YEV, Viktor Georgiyevich, kand.tekhn.nauk, dotsent; TIMANOVSKAYA,  
Lidiya Yefimovna, aspirant

Construction of an electronic model of the engine and regulator  
of the TE-10 diesel locomotive. Izv.vys.ucheb.zav.; elektromekh.  
6 no.2:205-216 '63. (MIRA 16:4)

1. Dekan fakul'teta avtomatiki i priborostroyeniya,  
zaveduyushchiy kafedroy elektricheskikh apparatov Khar'kovskogo  
politekhnikeskogo instituta (for Vasil'yev). 2. Kafedra  
elektricheskikh apparatov Khar'kovskogo politekhnicheskogo  
instituta (for Timanovskaya).

(Diesel locomotives--Models)

(Diesel locomotives--Electromechanical analogies)

MALEVSKIY, Yuzef Boleslavovich; VASIL'YEV, Valentin Grigor'yevich;  
GRABIN, Vladimir Fedorovich; NERCENKO, M.M., inzh.,  
otv. red.; POGORETSKAYA, L.N., red.

[Equipment for the dilatometric investigation of transformations in welded joints] Ustanovki dlia dilatometri-  
cheskogo issledovaniia prevrashchenii v svarnykh soedini-  
eniakh. Kiev, Naukovadumka, 1964. 35 p.  
(MIRA 18:2)



Dissertation: "Deformations of Construction Members From Lateral Welded Seams." Cand  
Tech Sci, Leningrad Shipbuilding Inst, Leningrad, 1954.  
Referativnyy Zhurnal--Mekhanika, Moscow, May 54.

SO: SUM 284, 26 Nov 1954

VASIL'YEV, V.I.

Determining deformations and strains produced by longitudinal shrinkage of welded joints. Trudy IKI no.16:105-115 '55.  
(MIRA 13:4)

1. Kafedra svarki sudovykh konstruktsiy Leningradskogo korable-stroitel'nogo instituta.  
(Ships--Welding) (Strains and stresses)

VASIL'YEV, V. I.

137-58-1-834

Translation from: Referativnyy zhurnal, Metallurgiya, 1956, Nr 1, p 121 (USSR)

AUTHOR: Vasil'yev, V. I.

TITLE: On the Determination of Deformations of Structural Elements Due to Longitudinal Shrinkage in Welds (K voprosu opredele-niya deformatsiy elementov konstruktsiy ot prodol'noy usadki shvov)

PERIODICAL: Tr. Lening. korablestroit. in-ta, 1956, Nr 19, pp 71-78

ABSTRACT: An investigation is made into the distribution of curvature in thin pieces upon edging of welds of different lengths. The solution of the two-dimensional problem in the theory of elasticity is employed in determining the nature of change in curvature. It is assumed that identical strains develop along the entire length of the weld on the edge on the weld side and on the deposit on the opposite side. Two cases of change in curvature of flat pieces when a stem is fused to the edge: 1) along the entire length of the piece, and 2) along part of the length of the piece. It is established that the nature of the change of the curvature and the abscissa of its value depend upon the length and width of the pieces and the length of the

Card 1/2

137-58-1-834

On the Determination of Deformations of (cont.)

seams. Analytical expressions are derived and the range of applicability and accuracy of the formulas are established.

A. K.

1. Welds--Deformation analysis    2. Welds--Shrinkage    3. Welds--Mathematical

Card 2/2

VASIL'YEV, V.I., inzh.

Mechanization of welding operations in the manufacture of  
freight cars. Svar.proizv. no.5:27-28 My '62. (MIRA 15:12)

1. Dneprodzerzhinskiy vagonostroitel'nyy zavod.  
(Railroads--Freight cars)  
(Electric welding--Equipment and supplies)

VASIL'YEV, V. I.

Agriculture

Planting trees and shrubs, Izd 2-e, dop. Moskva, Izd. Mir. kommun. Khoz. RSFSR, 1951.

Monthly List of Russian Acquisitions, Library of Congress, December 1952. Unclassified.

VASIL'YEV, V. I.; MAKEYENKO, G. I.

Moscow

Suburban greenbelt of Moscow, Gor. khoz. Mosk. No. 5, 1952.

9. Monthly List of Russian Accessions, Library of Congress, July 195~~7~~<sub>2</sub>, Unclassified.

VASIL'YEV, Vitaliy Ignat'eyvich, kandidat sel'skokhozyaystvennykh nauk;  
GUSEVA, N.P., redaktor; ZLOBIN, M.V., tekhnicheskii redaktor

[Experience in the cultivation of orchards and vineyards in western Kazakhstan; work practices of the Ural fruit and berry base of the V.R.Vil'iama Agricultural Research Institute of the Kazakh branch of the All-Union Lenin Academy of Agriculture] Opyt razvedeniia sadov i vinogradnikov v Zapadnom Kazakhstane; iz opyta raboty Ural'skogo plodovo-iagodnogo opornogo punkta Nauchno-issledovatel'skogo instituta zemledeliia im. V.R.Vil'iama Kazakhskogo filiala VASKhNIL. Alma-Ata, Kazakhskoe gos. izd-vo, 1956. 47 p. (MLRA 10:3)  
(Kazakhstan--Fruit culture)



VASIL'YEV, V.I.; NERONOVA, M.D., red.; SHLIKHT, A.A., tekhn.red.

[Landscaping backyards] Ozelenenie dvorov. Moskva, Izd-vo  
M-vn kommun.khoz.RSFSR, 1959. 93 p. (MIRA 12:12)  
(Landscape gardening)

LIKHACHEV, L.Ya.; BELONOGOV, I.I.; VASIL'YEV, V.I.

Studying the efficiency of using water screens and normalization  
of their operation. Nauch. soob. VostNI no.3:80-82 '63.  
(MIRA 1735)

VASIL'YEV, V.I.; MARSHAK, I.S.

Load limits of pulse tubes. Sbor. nat. po vak. tekh. sr. 1966. - 1966.  
(MIRA 1966)

(Electron tubes)

Vasilenko, V. I.

P.3

PHASE I BOOK EXPLOITATION SOV/3610

Moscow. Gosudarstvennyy soyuznyy zavod. Byuro tekhnicheskoy informatsii.

Sbornik materialov po vakuumnoy tekhnike, vyp. XIV (Collection of Articles on Vacuum Engineering, No. 14) Moscow, Gosenergoizdat, 1958. 103 p. 500 copies printed.

Eds.: R.A. Nilender, Chief Engineer of the Plant (General Ed.); A.G. Aleksandrov, V.D. Vladimirov; Ed. I.L. Iglitsyn; Tech. Ed.: K.P. Voronin.

PURPOSE: This collection of articles is intended for specialists in vacuum technology and electronics.

COVERAGE: The collection contains five papers on electron tubes written by the engineering personnel of the Gosudarstvennyy soyuznyy zavod (State Union Plant). No personalities are mentioned. References accompany all but one of the articles.

TABLE OF CONTENTS:

Card 1/5

Collection of Articles (Cont.)

SOV/3610

Lipkovskiy, L.M. Sensitive Method of Measuring Ion Currents in Electron Tubes With a Grid

3

In order to determine the pressure of grid gas in unsoldered electron tubes, a method based on the measurement of positive ion current is applied. The method used by the author consists in finding the tube's "vacuum factor", which is determined by the relation between the value of the full ion current flowing across the ion-collecting electrode and the full value of the excitation electron current flowing across the electron-collecting electrode. This factor also depends on the selection of the electrodes, their geometry, and the difference in potential between the point in space at which the positive ion is produced and the potential of the cathode. In order to eliminate the influence of leakage current on the results of measurements, the plant laboratory applied the alternating-current method. As a result of investigations, the methods of measuring ion currents introduced by E.W. Herold were improved by making them more precise.

Card 2/5

Collection of Articles (Cont.)

SOV/3610

Vasil'yev, V.I., and I.S. Marshak. Load Limit of Tubular Flash-  
tubes

19

The first part of the paper is a study of the critical load associated with the destruction of the glass shell in flashtubes with low discharge frequency. The critical load was found to depend mostly on the value of  $C.l$ , where  $C$  is the capacitance of the supply capacitor and  $l$  is the distance between the flash-tube electrodes. The type of glass and the kind and pressure of gas in the tube have less effect on the critical load. In addition, each type of glass flashtube may be characterized by the maximum permissible value of  $C.U^4$  (where  $U$  is the value of supply voltage), which the authors call the "load factor". The second part of the paper deals with quartz flashtubes in which the critical load depends on several factors, the most important of which is the breakdown of input leads, which are usually made of thin molybdenum foil strips. Other causes of breakdown are cracking of the quartz tube or its explosion, and disturbances in flashtube controllability.

Parusnikov, V.N., V.S. Nikolayeva, and M.I. Sokolova. Production of  
Card 3/5

Collection of Articles (Cont.)

SOV/3610

Tungsten Wire 5 to 8 Microns in Diameter by the Electrolytic Etching Method

51

This paper deals with the work done at the refractory metals section of the plant in obtaining very thin tungsten wires by electrochemical etching. This metal fiber is needed for production of grids in a new type of receiving tube, for development of precision optomechanical instruments, and for other purposes. The first samples and experimental lots of this wire were produced in 1949 and 1950. These first samples were 8 microns in diameter. Later, with improved equipment, 5 micron fiber was obtained in regular factory production lots. According to non-Soviet data, wire 3 microns in diameter has been produced under laboratory conditions in the United States. A description of the etching process, the equipment used, and some characteristics of the wire, are given.

Disman, A.M. Equipment for Measuring Conversion Transconductance 68

The author describes equipment developed by himself and B.I. Genkin for measuring conversion transconductance in 1A1P and 1A2P type tubes. The general testing capacity of the equipment

Card 4/5

Collection of Articles (Cont.)

SOV/3610

is 300 to 350 tubes per hour.

Arkin, G.I. New Methods of Raising the Signal-to-Noise Ratio of Noise Generated by Microphonic Effects in Vacuum Tubes.

In 1955, at a meeting of the VNORE imeni Popov, the author presented a report on generalized methods which he had developed for the analysis of processes occurring in vacuum-tube circuits operating under conditions of mechanical influences. The present work is based on these methods and attempts to study several problems connected with the design and calculation of low-frequency amplifiers and some wide-band amplifiers subject to mechanical vibrations giving rise to microphonic effects. In his conclusions the author suggests several methods of reducing microphonics by structural and technological improvements and by proper selection of tube types.

AVAILABLE: Library of Congress

Card 5/5

JP/jb  
6-8-60



MARSHAK, I.S.; VASIL'YEV, V.I.; MIROMOVA, A.I.; IVANOV, V.P.; VDOVCHENKO,  
R.G.

New pulse lamps. Usp.nauch.fot. 6:43-52 '59.  
(Electric discharge lighting)

(MIRA 13:6)

PHASE I BOOK EXPLOITATION

SOV/5409

Moscow. Gosudarstvennyy soyuznyy ordena Lenina zavod. Byuro tekhnicheskoy informatsii.

Sbornik materialov po vakuumnoy tekhnike, vyp. 24. Iz opyta raboty otdela tugoplavkikh metallov (Collection of Materials on Vacuum Engineering, no. 24. From the Work Experience of the Refractory Metals Section) Moscow, Gosenergoizdat, 1960. 86 p. 600 copies printed.

Sponsoring Agency: Gosudarstvennyy soyuznyy Ordena Lenina i Ordena Trudovogo Krasnogo Znameni zavod. Byuro tekhnicheskoy informatsii.

Editorial Staff: R.A. Nilender, Factory Chief Engineer (general editing), A.G. Aleksandrov, V.D. Vladimirov, and B.I. Korolev; Ed.: I.L. Iglitsyn; Tech. Ed.: G. Ye. Larionov.

PURPOSE: This collection of articles is intended for technical personnel engaged in vacuum engineering.

Card 1/3

Collection of Materials (Cont.)

SOV/5409

COVERAGE: The booklet contains articles which describe the application of vacuum techniques in various metallurgical processes, some methods of regulating the gaseous content of gas-filled tubes, and other uses made of vacuum techniques. No personalities are mentioned. References accompany most of the articles.

TABLE OF CONTENTS:

1. Amosov, V.M. Investigation of the Sintering Process of Electrolytic Tantalum Powder	5
2. Amosov, V.M. Obtaining Plastic Niobium From Electrolytic Powders	20
3. Amosov, V.M., and V.A. Lanis. Investigation of Gas-Evolution Processes During the Sintering of Tantalum and Niobium	35

Card 2/3

Collection of Materials (Cont.)

SOV/5409

4. Vasil'yev, V.I., V.P. Kirsanov, M.S. Levchuk, and I.S. Marshak.  
Concerning the Pulverization of Cathodes in Tubular Gas-Dis-  
charge Pulse Tubes 43
5. Lanis, V.A. Application of the Mass-Spectrometric Method  
for the Investigation of Gases Filling the Devices 60
6. Kantor, N.M., and V.A. Lanis. Mass-Spectrometric  
Investigation of Gases in High-Voltage Gas-Filled Tube  
Rectifiers 74
7. Kotlik, L.L. Spectral Analysis of Gases by Means of the  
Photoelectric Recording of Spectra 84

AVAILABLE: Library of Congress

Card 3/3

JP/dfk/mas  
8-3-61

VASIL'YEV, V.I.; KIRSANOV, V.P.; LEVCHUK, M.S.; MARSHAK, I.S.

Cathode sputtering in tubular discharge pulse tubes. Sbor. mat.  
po vak. tekhn. no. 24:43-59 '60. (MIRA 14:2)  
(Electron tubes) (Sputtering (Physics))

VASIL'YEV, V.I., KOMEL'KOV, V.S., SKVORTSOV, Yu.V., TSEREVITINOV, S.S.

Stable dynamic current flux. Zhur. tekhn. fiz. 30 no.7:756-768  
J1 '60. (MIRA 13:8)

(Electrical discharges in gases)

24,3100 (also 1051, 1106, 1163)  
9,2576 (also 1055, 1532)

32192  
S/196/61/000/010/011/037  
E194/E155

AUTHORS: Marshak, I.S., Vasil'yev, V.I., Tokhadze, I.L., and Rogatin, N.V.

TITLE: Powerful xenon-tube 'sun' lamps operating without ballast

PERIODICAL: Referativnyy zhurnal, Elektrotekhnika i energetika, no.10, 1961, 11, abstract 10V 89. (Svetotekhnika, no.4, 1961, 8-17)

TEXT: It follows from considerations of the physical mechanism of impulse discharges in tubular impulse lamps that this discharge is quasi-stationary, i.e. it can continue indefinitely provided that the current supply is not exhausted and the discharge tube is not thermally overloaded. The discharge channel is of considerable ohmic resistance (some hundreds of ohms), which depends on its geometry and which alters little with the electric stress or specific resistance of the plasma. Because of this resistance the lamps need no ballast, and the potential difference across their electrodes is equal to the supply voltage. Experimental data about the specific resistance of plasma and Card 1/4

Powerful xenon-tube 'sun' lamps ...

32192  
S/196/61/000/010/011/037  
E194/E155

permissible mean power-loading on the quartz tube walls permit of approximate calculation of the length and diameter of discharge tubes in which discharge, like quasi-stationary discharge in impulse lamps, could continue indefinitely (i.e. be quite steady) provided that it receives supply from a steady electrical system without any series ballast resistance. The comparatively high discharge-extinction voltage in narrow-tube impulse lamps governs the minimum internal diameter of the tube and, consequently, the power per unit length in the case of supply from an a.c. system. From data on impulse tubes fed directly from an a.c. system (without storage capacitor) with a current impulse for one quarter of a cycle, it is found that the minimum internal diameter and power mentioned above are respectively 16-20 mm and 95 W/cm. With supply voltages of 380, 220 and 127 V the minimum power of ballastless a.c. lamps and their lengths should be respectively 15, 8.5 and 5 kW and 156, 90 and 52 cm. D.c. impulse lamps should be smaller in diameter and consequently of lower power. These statements were confirmed by an investigation of prototype discharge lamps of various diameters (16-48 mm), lengths

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Powerful xenon-tube 'sun' lamps ... <sup>32192</sup>  
S/196/61/000/010/011/037  
E194/E155

(600-3400 mm) and xenon pressures (15-200 mm Hg) made with various kinds of supply (d.c. and a.c. at various voltages) and cooling conditions (natural and forced water cooling). The investigation also gave a more accurate idea of the value of the power load on the tube walls (for an impulse tube operating for 500-1000 hours) and the specific resistance of plasma (when used under steady conditions of low electrical gradient). On comparing these values of ignition voltage and light output of impulse lamps with those obtained in the work for tubes of various parameters, a technical basis was provided for optimum design of ballastless xenon lamps of 20 kW power for a.c. 380 V supply. The principal characteristics of discharge lamps (compared with 20 kW Osram tubular xenon lamps supplied through a ballast reactor, indicated in brackets) are: current 57 A (75 A); light output 29 lumens per watt (25 lumens per watt); circuit power factor 1 (0.73); overall length 1980 mm (1900 mm); tube diameter 27 mm (30 mm); life over 500 hours (over 500 hours). A small starting device such as a Tesla transformer with appropriate switching suffices to start the lamp instead of the large and heavy starting equipment with reactor (approximate weight: copper 50 kg; steel 150 kg) used for German Card 3/4

32192

S/196/61/000/010/011/037

E194/E155

Powerful xenon-tube 'sun' lamps ...

lamps. The Soviet lamps have metal terminals in quartz (comparatively thin molybdenum foil wound in cylinders) which are easier to make and are more reliable. The principal data for designing similar impulse lamps for other working voltages and powers were determined at the same time. It was found that by increasing the tube diameter and reducing the supply voltage it is possible to increase the light output for a given power (an impulse lamp for 220 V, 16.4 kW has a light output of 33 lumens per watt). By use of water cooling the electrical gradient can be increased, still further increasing the light output (with a gradient of 4 V/cm and internal diameter of 16 mm the light output of the impulse lamp is 38 lumens per watt). Xenon ballastless 'sun' lamps have a mainly continuous almost equal-energy visible spectrum with a weakly expressed maximum at 480 nm (nanometres) which corresponds to a light temperature of 6000 °K.  
9 illustrations. 20 literature references.

[Abstractor's note: Complete translation.]

Card 4/4

VASIL'YEV, V.I.; LEVCHUK, M.S.; MARSHAK, I.S.

Duration of the flash of tubular pulse lamps. Opt.i spektr. 11  
no.1:118-122 J1 '61. (MIRA 14:10)  
(Electric lamps) (Oscillography)

MARSHAK, I.S., kand. tekhn. nauk; VASIL'YEV, V.I., inzh.; TOKHADZE, I.L.

Small balastless tubular xenon lamp with water cooling.  
Svetotekhnika 9 no.11:13-17 N '63. (MIRA 16:12)

1. Moskovskiy elektrolampovyy zavod.

MARSHAK, I. S.; VASILYEV, V. I.

"Physical and Technical Characteristics of the Gas Discharge in  
Tubular Xenon Lamps"

International Symposium on Ionization Phenomena in Gases  
Paris, France, 8-13 July 1963

VASILYEV, V. I., ARETOV, G. N., KOMELKOV, V. S., PERGAMENT, M. I.,  
TSEREVITINOV, S. S., VASILYEV, V. I.,

"The Structure of Plasmoids of Coaxial Injector,"

report presented at the 6th Intl. Conf. on Ionization Phenomena in Gases,  
Paris, France, 8-13 Jul 63

ACCESSION NR: AT4025288

S/0000/63/000/000/0010/0020

AUTHOR: Pergament, M. I.; Vasil'yev, V. I.; Komel'kov, V. S.; Tserevitinov, S. S.

TITLE: Investigation of infection and pinching of a plasma with the aid of an electron-optical time magnifier

SOURCE: Diagnostika plazmy\* (Plasma diagnostics); sb. statey. Moscow, Gosatomizdat, 1963, 10-20

TOPIC TAGS: plasmoid, plasma injection, plasma confinement, electrooptical effect

ABSTRACT: The injection and pinching of a plasma was investigated by means of an electron-optical "time magnifier" technique which was developed by the authors earlier (Trudy\* 2-go vsesoyuznogo soveshchaniya po vy\*sokoskorostnoy fotografii i kinematografii, Moscow, 1960, AN SSSR, 1963). A series of photographs was taken at a rate of  $10^5$  --  $5 \times 10^6$  frames per second and an exposure of  $5 \times 10^{-3}$  --  $5 \times 10^{-6}$  sec. The series consisted of 4, 8, or 16 frames spaced 0 --  $10^{-4}$  sec apart. Each frame measured  $5 \times 5$  mm and the resolution time was 30 pairs of lines per millimeter. The adjustment necessary to obtain optimal conditions of the "time magnifier" are described in detail. Some of the data obtained in the photographs are compared with oscillographic data. On the basis of an analysis of both the

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ACCESSION NR: AT4025288

photographs in the oscillograms it is suggested that the plasmoid consists of three principal parts: non-glowing highly ionized region, a region of intense impurity emission, and a region detached from the two walls, with bright deuterium lines, having a conical front. The latter region should have a low temperature, (i.e., weak ionization), because it does not crowd out the magnetic field well. These conclusions are confirmed by a study of the time variation of the intensities of the individual spectral lines at different points of the plasma loop, using a monochromator with a photomultiplier. The pinching of an injected plasma by rapidly growing fields and a study of a plasma injector based on the "gushing pinch" (V. S. Komelkov et. al., Proceedings Fifth International Conference on Ionization Phenomena in Gases, Munich, 1961, v. II. p. 2190, North Holland, Amsterdam, 1962) were also investigated by this technique and it is shown that it provides information not readily available by other means. Orig. art. has: 5 figures.

ASSOCIATION: None

SUBMITTED: 19Oct63

DATE ACQ: 16Apr64

ENCL: 00

SUB CODE: ME

NR REF SOV: 004

OTHER: 001

Card 2/2



NOVIKOV, Vasilii Aleksandrovich; KICHIGIN, Nikolay Mikhaylovich;  
VASIL'YEV, Vladimir Ivanovich; ; LITVINOV, Ye.V., inzh.,  
retsensent; SERIK, A.P., red.

[The TL-TsINS single-bucket tractor-mounted loaders and  
shovelling machines] Odnokovshovye traktornye pogruzchiki-  
traktornye lopaty TL-TsINS. Moskva, Pishchevaia promyshlen-  
nost', 1965. 141 p. (MIRA 18:6)

VASIL'YEV, V.I.

Improvement of the lighting system of the MIN-9 mineragrophic  
microscope for operation in reflected light using a binocular  
device of the AU-12 type. Geol. i geofiz. no.6:156-158 '64.  
(MIRA 18:11)

1. Institut geologii i geofiziki Sibirskogo otdeleniya AN SSSR,  
Novosibirsk.

MARSHAK, I.S.; VASIL'YEV, V.I.; VASSERMAN, A.L.; TOKHADZE, I.L.

Very high-power tubular xenon lamps without ballast, a new kind of effective light source for high-speed motion-picture photography. Usp.nauch.fot. 9:159-166 '64.

(MIRA 18:11)

L 32035-66 ENT(d)/EEC(k)-2

ACC NR: AP6019778

SOURCE CODE: UR/0119/66/000/006/0006/0008

AUTHOR: Vasil'yev, V. I. (Candidate of technical sciences)

ORG: none

TITLE: Certain problems associated with automatic fault indicators for digital telemetry systems

SOURCE: Priborostroyeniye, no. 6, 1966, 6-8

TOPIC TAGS: test instrumentation, telemetry

ABSTRACT: Two variants of automatic fault locating units for digital telemetry systems are introduced. Theoretical investigation carried out by the author shows that the optimum number of reliability tests needed for the controlled unit, including the probability of random failures during two clock periods, is two. Based on this, the first circuit has two inputs 1 and 1' connected to the control and controlled circuits. The coincidence or noncoincidence gate outputs set flip-flop T<sub>1</sub> or T<sub>2</sub> and open gates K<sub>1</sub> or K<sub>2</sub>, allowing the signals indicating correct or faulty unit performance to reach their respective outputs. In the second variant, the same input signals are first applied to blocking generators BG<sub>3</sub> or BG<sub>4</sub>, AND or NAND gates, ferrite-transistor flip-flops FF<sub>1</sub> or FF<sub>2</sub>, FF<sub>3</sub> or FF<sub>5</sub>, which in turn set flip-flops FF<sub>4</sub> or FF<sub>6</sub>.

Card 1/3

UDC: 621.398.623

L 32035-66

ACC NR: AP6019778

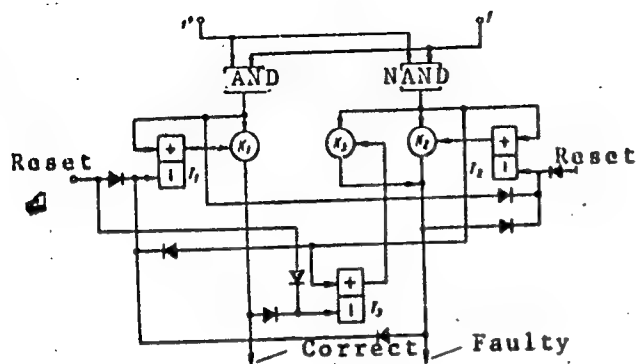


Fig. 1. Failure indicator (variant 1)

FF<sub>1</sub> or FF<sub>2</sub> are reset by the synchronization pulses at this time. If during the second clock period the state of the telemetry system remains the same, the final outputs from Tp<sub>1</sub> or Tp<sub>2</sub> pulse transformers will indicate correct or faulty equipment performance, respectively. These units assure a minimum down time for telemetry systems. The author further determines

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L 42949-66 EWT(d)/EWP(v)/EWP(k)/EWP(h)/EWP(l) GD/BC  
 ACC NR: AT6017615 (N) SOURCE CODE: UR/0000/65/000/000/0203/0211

AUTHOR: Vasil'yev, V. I.

ORG: none

TITLE: Non-searching differential systems for extremum control 14

SOURCE: Vsesoyuznaya konferentsiya po teorii i praktike samonastroyayushchikh sistem. ist, 1963. Samonastroyayushchiye sistemy (Adaptive control systems); trudy konferentsii. Moscow, Izd-vo Nauka, 1965, 203-211 14

TOPIC TAGS: self adaptive control, nonlinear automatic control, automatic control equipment, nonlinear control system, steam power plant, speed regulator, rolling mill

ABSTRACT: Two extreme control systems, designed to operate without going through search oscillations characteristic of the currently known control systems of this type are described. In addition to the analysis and design information, two actual applications are also described. Most of the controlled processes may be approximated by a parabola in a graph of the quality index (ordinate) vs control action (abscissa). The object of the extremum control process is to make the operating point of the process or mechanism coincide with the optimum point located at the apex of the parabola. The first differential system for extremum control is based on deformation of the control characteristic such that a second parabola, symmetrical about the same vertical axis

Card 1/3

L 42949-66

ACC NR: AT6017615

as the first, is formed artificially by using a second quality sensing system having a different transfer function. Hence, the second characteristic is "deformed" with respect to the first. The object of the control is to keep the *difference* between the signals from the two sensors equal to zero. Consequently, the operating point in this system does not coincide with the apex of the parabola, but is maintained at the point of the intersection of the two parabolas, which corresponds to an acceptable quality of the system. The second system is based on *displacement* of the control characteristic along the abscissa, such that a second parabola is formed, identical in shape to the first and having axis of symmetry parallel to that of the first curve. The object of the control is to keep the sum of the outputs from the two sensors corresponding to the quality of the control equal to zero. The second parabola represents an artificial model, in a sense serving as a reference for the control system, not unlike the function of the reference signal used in synchronous demodulation circuits. This system lends itself well for multiparameter control of complex processes. It is necessary, however, to construct a model for the control function of each parameter separately. Both systems proved to be superior to the conventional search type system in their noise immunity. Two applications of the new control systems are described. The first is a scheme for chemical purification of boiler water in a generating plant. The object of the control is to maintain a desired level of mild alkalininity in water using ion exchange filters. The "displacement" type control system is utilized, in which water having *controlled acidity* is used as a model (second parabola). The second is an apparatus for measuring speed of hot metal on a rolling mill.

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ACC NR: AT6017615

Two photosensors located within a known distance from each other generate signals, random in time, proportional to the amount of light scattered from the surface imperfections of the metal. The speed is calculated by determining the time it takes a portion of the metal strip to travel the known distance between the sensors. Here again the second type of control system is used in which a known lag introduced into the output of one of the two sensors serves as the model. By varying this lag and comparing two signals, a cross correlation operation is continuously maintained. The maximum will occur when the lag is equal to the instantaneous value of the time of travel between the two detectors, hence the speed can be determined. The same system can be applied for measuring the speed of a vessel with respect to the bottom, utilizing two ultrasonic transponders located at the stern and the bow of the ship. The speed of hovercraft with respect to ground can be similarly measured. Orig. art. has: 21 formulas, 4 figures.

SUB CODE: 09/

SUBM DATE: 22Nov65/

ORIG REF: 008

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Card 3/3 MLP



L 05858-67 ENT(d)/FSS-2  
ACC NR: AP6022055

SOURCE CODE: UR/0146/66/009/003/0057/0062

(C2)

55  
B

AUTHOR: Vasil'yev, V. I. ; Galek, I. ; Shtefka, I.

ORG: Taganrog Radio Engineering Institute (Taganrogskiy radiotekhnicheskiy institut);  
Engineering Institute of Control Theory and Methods in Machine Building, Brno (Inzhenernyy  
Institut teorii i metodov upravleniya v mashinostroyeni)

TITLE: Characteristics of methods for transmitting synchronizing information by multi-frequency codes

SOURCE: IVUZ. Priborostroyeniye, v. 9, no. 3, 1966, 57-62

TOPIC TAGS: signal transmission, synchronous communication, signal coding

ABSTRACT: A scheme is discussed for developing a synchronizing code with  $K - 1$  indexes and which passes through the same number of signal-index filters and delay devices (which are also required to deliver the received pulses simultaneously, at the end of the procedure, to a unit which performs a majority function). A parallel-series synchronizing code having  $n$  time partitions, each capable of carrying several signal indexes is considered. The number of pulses reaching the majority function prior to delivery of the synchronizing code is minimized by the method of indeterminate Lagrange multipliers. The maximum number of pulses at the

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UDC: 62-503

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ACC NR: AP6022055

input to the majority function for which the synchronizing code is capable of correcting a brevity errors is also determined. The case where  $s = \infty$  is treated. Schemes for parallel and series codes which correct single errors are illustrated. It is concluded that 1) the capability of series synchronizing codes for correcting errors does not exceed  $2\sqrt{\frac{K-1}{K-2}}$ ; 2) the synchronizing code may be reduced by using a parallel-series procedure; 3) for maximum reduction in code transmission time it is advisable to use the parallel procedure with an appropriate increase in the number of signal indexes. Orig. art. has: 13 formulas and 3 figures.

SUB CODE: 09,17/ SUBM DATE: 01Jul65/ ORIG REF: 003

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Card 2/2

L 38725-66 EWT(d)/EWT(1)/T/EWP(1) LJP(c) OG/BB  
 ACC NR: AP6013101 SOURCE CODE: UR/0102/66/000/002/0034/0042

AUTHOR: Vasyl'yev, V. I. -- Vasil'yev, V. I. (Kiev)

ORG: None

TITLE: Self-learning transducers <sup>10</sup>

SOURCE: Avtomatyka, no. 2, 1966, 34-42

TOPIC TAGS: coding, parameter, binary code, recognition process, statistics, measuring apparatus, measurement, LEARNING MECHANISM <sup>9M</sup>

ABSTRACT: The author studies the problems associated with continuous measurement of the secondary parameters and discrete measurement of the primary parameter of control members with absolute accuracy of the primary parameter at any moment. The apparatus used for carrying out this function is called a "self-learning transducer". The solution of this problem is based on recognition systems from the theory of statistical solutions. Optimum transformation of sign spacing is considered. A coding method is proposed which is more accurate and effective in representing the secondary characteristics in binary code than are other methods. A block diagram of the self-learning transducer is given. An example is given which shows that the basic principles on which the proposed method is based are valid. This example proves the possibility of using recognition systems for solving problems in the synthesis of self-learning transducers. Orig. art. has: 2 figures, 2 tables, 21 formulas.

SUB CODE: 09/ SUBM DATE: 10Feb65/ ORIG REF: 003/ OTH REF: 000

Card 1/1 <sup>10</sup>

L 15281-66 EWT(1)/EWT(m)/T/EWP(t)/EWP(b) LJP(c) JD

ACC NR: AT6001401

SOURCE CODE: UR/3180/64/009/000/0159/0166

AUTHOR: Marshak, I.S.; Vasil'yev, V.I.; Vasserman, A.L.; Tokladze, I.L.

ORG: none

TITLE: Superpower ballastless tubular xenon lamps as a new kind of efficient sources for high-speed cinematography

SOURCE: AN SSSR. Komissiya po nauchnoy fotografii i kinematografii. Uspekhi nauchnoy fotografii, v.9, 1964. Vysokoskorostnaya fotografiya i kinematografiya (High-speed photography and cinematography), 159-166

TOPIC TAGS: light source, high speed photography, xenon lamp

ABSTRACT: Following a brief outline of the historical development of xenon high-density discharge tubes the authors present a survey of theoretical and experimental data on superpower ballastless xenon lamps which may be used for high-speed cinematography. Scientific literature and experiments carried out by the authors are used to discuss: 1) the dependence of the specific resistance of tubular lamps on the electric gradient for various lamp parameters and cooling conditions; 2) light emission intensity as a function of power per unit length of the discharge; 3) the voltage drop across lamps of different lengths for the same current; 4) characteristics of continuously operating xenon tubular lamps of different power; 5) the circuitry for igniting ballastless xenon a-c lamps; 6) a circuit diagram of devices for the switching of xenon tubes into brief high-overload operating condition; 7) the maximum power liberated

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L 15281-66

ACC NR: AT6001401

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within the tube as a function of the length of operation under overload conditions; and 8) the spectral distribution of the radiation from tubular xenon lamps. The authors thank N. V. Rogatin, V. A. Suvorov, T. M. Gorya, I. P. Orekhov, V. B. Milenin and other comrades for their extensive participation in this work. Orig. art. has: 10 formulas, 7 figures, and 1 table.

SUB CODE: 14 / SUBM DATE: none / ORIG REF: 011 / OTH REF: 004

Card

2/2

7/1/85

LUBENETS, V.D., kand. tekhn. nauk, dotsent; VASIL'YEV, V.I., inzh.;  
VEDENIK, V.A., inzh.

Perfect operating process and theoretical indicator diagram  
of a two-rotor vacuum pump with partial internal pressure.  
Izv. vys. ucheb. zav.; mashinostr. no.10:119-132 '64  
(MIRA 18:1)

1. Moskovskoye vyssheye tekhnicheskoye uchilishche imeni  
N.E. Bauman.

I. 22720-66 EWT(d)/T/ETP(1) IJP(s) BR/CC  
 ACC NR: AP6002943 (A) SOURCE CODE: UR/0286/65/000/024/0106/0107

AUTHORS: Baranenko, P. M.; Petrov, G. A.; Vasil'yev, V. I.

ORG: none

TITLE: Key-actuated device for setting and <sup>16</sup>automatic decoding<sup>16</sup> of information. Class 42, No. 177173

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 24, 1965, 106-107

TOPIC TAGS: information processing, punched paper tape, punched card/ ALGOL-60

ABSTRACT: This Author Certificate presents a key-actuated device for setting and automatic decoding of information written in symbols of the algorithmic language ALGOL-60. The device contains a key field, a coder, a memory unit, and a control unit. To use the device with any punch and to eliminate subjective operator errors, the device contains a mode setting unit and dump of the memory, control and blocking registers (see Fig. 1). The mode setting unit is connected to the register dump units and the blocking unit. The register dump unit is also connected to the control unit, and the blocking unit is connected to a distributor. The outputs of the register dump unit are connected to the inputs of the memory register dump. The output of the blocking unit is connected to the input of the control unit, and the outputs of the distributor are connected to the corresponding register inputs.

Card 1/2 UDC: 681.142

L 22720-66

ACC NR: AP6002943

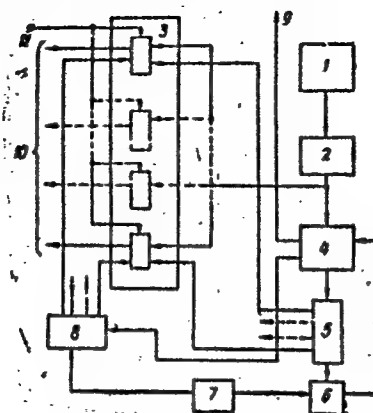


Fig. 1. 1 - key field; 2 - coder; 3 - memory unit; 4 - control unit; 5 - distributor; 6 - blocking unit; 7 - mode setting unit; 8 - register dump unit of memory unit; 9 - control unit output for blocking punch; 10 - outputs from registers to distributor; 11 - input from punch for register dump.

Orig. art. has: 1 diagram.

SUB CODE: 09/ SUBM DATE: 05Oct64

Card 2/2

*UVR*



L 23320-66 ENT(d)/FSS-2/T/EWP(1) IJP(c) 33/33

ACC NR: AP6009783

SOURCE CODE: UR/0102/66/000/001/0007/0021

AUTHOR: ~~Vasil'yev, V. I.~~ -- Vasil'yev, V. I. (Kiev, L'viv); Ivakhnenko, O. H. -- Ivakhnenko, A. G. (Kiev, L'viv); Lemishchevskiy, G. A. (Kiev, L'viv); Reuts'kyy, V. Yu. -- Reutskiy, V. Ye. (Kiev, L'viv)

ORG: none

TITLE: Algorithm of recognition systems of the perception type with a correlation on the input

SOURCE: Avtomatyka, no. 1, 1966, 7-21

TOPIC TAGS: algorithm, recognition system, perceptron, autocorrelation function, digital computer, analog television system

ABSTRACT: This paper deals with a recognition system, consisting of a correlator and perceptron, designed for recognition of patterns on a uniformly illuminated background. To reduce the size of the recognition system, a two-dimensional autocorrelation function is employed as the input description. This function is invariant to some isomorphous transformations. A new autocorrelation function, obtained by "positive" and "negative" images, is proposed, which permits the reduction of the dimensions of the apparatus. The algorithm for calculating the autocorrelation function is adapted for digital computers. An analog television variation of the autocorrelator is also described. The percep-

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ACC NR: AP6009783

tion part of the system (choice of properties, masks—random prototypes, etc.) is calculated. The results of the simulation will be presented in the next paper. Orig. art. has: 6 tables, 7 formulas, and 8 figures. [Based on author's abstract] [AM]

SUB CODE: 09, 17/ SUBM DATE: 14Oct65/ ORIG REF: 003

Card 2/2 *fv*

KRESHKOV, A.P.; VASIL'YEV, V.I.

Analysis of a mixture of nitro-ortho-toluidine isomers and a mixture of nitro-para-toluidine isomers by a method of spectrophotometric titration in nonaqueous solutions. Zhur. anal. khim. 19 no.12:1508-1512 '67. (MIRA 18:1)

L. D.I. Mendeleev Moscow Chemical-Technological Institute.

KRESHKOV, A.P.; VASIL'YEV, V.I.

Differentiating effect of nonaqueous solvents as dependent on the  
titrimetric method of determining acids and bases. Trudy MKHTI no.44'  
125-131 '64. (MIRA 18:1)

SOKOLOV, A.A., kand.tekhn.nauk; ZAKHAROV, A.G., inzh.; VASIL'YEV, V.I., inzh.

Bibliography. Torf.prom. 40 no.5:37-40 '63. (MIRA 16:3)

1. Moskovskiy filial Vsesoyuznogo nauchno-issledovatel'skogo instituta  
torfyanoy promyshlennosti.

(Bibliography—Peat industry)

VASIL'YEV, V. I.

"Sovremennye etnicheskiye protsessy v nizob'yakh Eniseya."

report submitted for 7th Intl Cong, Anthropological & Ethnological Sciences,  
Moscow, 3-10 Aug 64.

VASIL'YEV, V.I.

S/102/60/000/02/04/005  
C111/C222

9.4310

AUTHORS: Vasil'yev, V.I., and Kuntsevich, V.K. (Kyyiv)

TITLE: Contactless Synchronous Relay Type Detector for Infra-low  
Frequencies

PERIODICAL: Avtomatika, 1960, No.2, pp. 73-75

TEXT: The present paper contains a description of a contactless synchronous detector with transistors projected in the Laboratory of Automatic Control of the Institute of Electrical Engineering of the Academy of Sciences Ukr.SSR. The detector shall be used for extremal systems. The connection between the input magnitude and output magnitude is the same as for contact circuits. Triodes of the type P6A are used. Experiments have shown that only triodes with equal characteristics shall be used. There are 4 figures.

SUBMITTED: January 15, 1960

Card 1/1

Vasyl'ev V I

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S/102/60/000/003/004/006

C 111/ C 333

AUTHORS: Kuntsevych, V. M., Vasyl'yev, V. J. (Kyiv)

TITLE: New Schemes of Extremum Controllers of the Step Type

PERIODICAL: Avtomatika, 1960, No. 3, pp. 31-37

TEXT: This paper present a description of two schemes of extremum controllers of the step type developed in the automatic control laboratory of the Instytut elektrotehniki AN URSR (Institute of Electrical Engineering of the Academy of Sciences of the Ukrainian SSR). Without differing from the existing extremum controllers by the law of regulation which is utilized, the new controller schemes differ advantageously from them constructively, inasmuch as their contact elements are almost completely replaced by contactless elements in order to raise the reliability of operation. ✓

The controller schemes described in this paper are designed chiefly for controlling objects to be regulated with great inertia and (or) with great delay. The control period of the controllers may be gradually altered from 0 to 8 or 9 minutes.

The first of the described controllers is a controller of the relay type having a law of regulation

Card 1/3



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S/102/60/000/003/004/006

C 111/ C 333

New Schemes of Extremum Controllers of the Step Type

$$(1) \begin{cases} u = a_0 \operatorname{sign} (\bar{\varphi}_n - \bar{\varphi}_{n-1}) u_{n-1} & \text{for } nT \leq t \leq (n + \gamma)T \\ u = 0 & \text{for } (n + \gamma)T \leq t \leq (n + 1)T, \end{cases}$$

where  $\gamma = \text{const}$  is the impulse width,  $T$  control period,  $\bar{\varphi}_n$ ,  $\bar{\varphi}_{n-1}$  values of the controlled variable averaged over  $T$  taken at the origin of the  $n - 1$  and  $n$  periods of the control,  $u$  voltage of the impulse element, while in the second extremum controller latitude-impulse modulation - law of regulation (1),

$$(3a) \gamma \approx \gamma_0 + a |\bar{\varphi}_n - \bar{\varphi}_{n-1}| \quad \text{for } \operatorname{sgn} u_n = \operatorname{sgn} u_{n-1}$$

and

$$(3b) \gamma = \gamma_0 \quad \text{for } \operatorname{sgn} u_n \neq \operatorname{sgn} u_{n-1}$$

where  $\gamma_0 = \text{const}$  - is used for improving the quality of the control process.

The described controllers ensure the required change of sign of the regulating effect with a change in voltage  $u_0$  proportional to the extremum index by  $\sim 0.15$  v (with change in  $u_0$  ranging from 0 to 5 v).

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S/102/60/000/003/004/006

G 111/ G 333

New Schemes of Extremum Controllers of the Step Type

B. K. Svetal's'kyi, engineer is mentioned in the paper.

There are 5 figures, and 2 Soviet references.

SUBMITTED: April 20, 1960

Card 3/3

VASYL'YEV V.I.

S/102/61/000/003/002/007  
D251/D302

16.8000

AUTHOR: Vasyl'yev, V.I., (Kyyiv)

TITLE: Optimizing regulators with a differential circuit

PERIODICAL: Avtomatyka, no. 3, 1961, 30 - 35

TEXT: On the basis of O.H. Ivakhnenko (Ref. 1: Avtomatyka, no. 1, 1961) the author considers various circuits with differential regulators. In the case when the control law is  $\dot{\theta} = -m(p) \theta + n(p) \mu + \eta$  where  $\theta$  is the regulated quantity and  $\mu$  the regulating influence, the system may be applied to solving the optimizing case. The circuit is based on that of V.M. Chykolyev, and will give, it is claimed, a solution which is rough, but simple and reliable. The system allows the plant under control to work near the extremum without hunting oscillations. An adaptation to the circuit is described which makes it possible either to keep the plant working in the region of the extremum, or with a certain (chosen) deviation from the extremum. The circuits, and their characteristics are shown diagrammatically. Abstractor's note: There are no pro-

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Card 1/2

Optimizing regulators with ...

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per keys to the diagrams. The author concludes with some general remarks on the principle of subtraction and the principle of multiplying input variables, and to the work of J.M. Ham and of O.M. Kostyuk (Ref. 5: Avtomatyka, no. 2, 1960) There are 5 figures, 1 table and 5 references. 4 Soviet-bloc and 1 non-Soviet-bloc. The reference to the English-language publication reads as follows: G. Lang, J.M. Ham, Conditional Feedback System - a New Approach to Feedback Control, Application and Industry, July 1955

SUBMITTED: February 1, 1961

Card 2/2